

## A Survey on the Prevalence of Choking in Children under Two Years Old and Awareness of Mothers Referring to Health Centers in Ahvaz City

Mehdi Mojadam<sup>1,2</sup>, Morteza Abdullatif Khafaie<sup>2</sup> 

<sup>1</sup> Department of Disaster and Emergency Health, School of Public Health, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

<sup>2</sup> Social Determinant of Health Research Center, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Khuzestan, Iran

ARTICLE INFO	ABSTRACT
<p><b>ORIGINAL ARTICLE</b></p> <p><b>Article history:</b> Received: 23 Mar 2018 Revised: 30 June 2018 Accepted: 10 July 2018</p> <p><b>*Corresponding author:</b> Morteza Abdullatif Khafaie</p> <p><b>Address:</b> Ahvaz Jundishapur University of Medical Sciences, Golestan St., Ahvaz, Khuzestan, Iran</p> <p><b>Email:</b> khafaie-m@ajums.ac.ir</p> <p><b>Tel:</b> +98-61-33362536</p>	<p><b>Introduction:</b> Accidents are one of the most important health problems that always threaten children, and inability caused by them not only affects their health but also their education and other dimensions of their life and their families. Therefore, mothers' awareness of incident prevention methods, especially choking, is very important. Therefore, this study aimed to determine the prevalence of choking in children less than 2 years old and to assess the awareness of mothers referring to health centers in Ahvaz city.</p> <p><b>Methods:</b> In this cross-sectional study, 100 mothers with at least one under two years old child who referred to Ahvaz health centers to receive routine mother and child care were selected during 2017. Four health centers were randomly selected as clusters from all listed centers and subsequently 53 mothers from west and 47 mothers from East of Ahvaz were recruited. Mother's awareness measured using a standardized researcher made questionnaire. The groups difference was investigated by chi-square and one-way ANOVA as appropriate. Logistic regression was also used to investigate the association between history of choking and mother's awareness.</p> <p><b>Results:</b> The present study showed that the prevalence of choking in children younger than 2 years old was 19%, and the mean level of awareness of mothers was <math>16.53 \pm 3.51</math>; corresponding for 60% of total awareness score. Despite the higher awareness score among mothers with a child with history of choking there was no significant relationship between the prevalence of choking and awareness of mothers.</p> <p><b>Conclusion:</b> Although most of mothers had awareness about choking, the frequency of choking was considerable. Therefore, it is suggested to conduct more extensive studies using qualitative method to extract important and effective factors in the occurrence of such events among mothers with child choking experience and design effective interventions for preventative measures in mothers.</p> <p><b>Keywords:</b> Choking, Awareness, Mothers, Children</p>

### Introduction

The World Health Organization (WHO) has described accident as an unprecedented incident that causes identifiable injuries (1).

Accidents are always the main causes of a health threat in each country (2) and as one of the most important causes of disability and death in humans; it imposes a large financial burden on the

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community (3). Childhood injuries nowadays have become a public health problem, which has a direct and indirect economic burden caused by childhood premature deaths (4). In 2012, an average of about 5 million people were killed annually due to accidents, according to the WHO report, this figure will reach 8.4 million in 2020 (5). Studies have shown that child mortality has increased globally (6) in relation to children death from chronic and contagious diseases. According to the WHO statistics, 90% of accidents occur in low and middle-income countries (7). In many countries, accidents are the main cause of death in children; in Japan, accidents are the first cause of death in children (8). In the United States, accidents are the main cause of death in the ages of one to 18 years (9). Studies show that in the United States, 2,800 children die annually due to domestic injuries. Four million children, as a result of these incidents, use emergency services and 13 million children have used at least once the outpatient medical services due to injuries from home accidents. The number of hospitalized children due to home accidents is reported to be 74,000 annually (10, 11).

In Iran, accidents are the third leading cause of death for all ages and the first cause of death for ages under 40 years (1). Children are more vulnerable to accidents due to limitations in the risk identification compared to adults (12); therefore, accidents are one of the most important health problems that threaten children (13) and cause many deaths annually and children that survive life-threatening events may require permanent care. Incapacitation not only affects the child's health but also her education and other dimensions of her and her family's lives and imposes many costs on the health system (14, 15).

One of the major event that affect children health is choking. The entry of external objects into the airways is one of the common causes of respiratory access in children, especially at the age of 6 months to 3 years old (16). The ingestion of external objects to airways is one of the major causes of child death, especially infants, and 12% of accidents involve swallowing small toys and

food. Furthermore, 6 percent of deaths from accidents at the age of fewer than 5 years old are due to choking (17, 18). In a study in the United States, the cause of death of 7% of children under the age of 4 years old was entering external objects into airways (19). In a research in Iran, the death rate due to choking was reported to be 2.9% (20).

It seems that many injuries have occurred due to negligence and lack of awareness of parents. In order to better take care of children, giving parents and other family members, the necessary information in this regard might reduce the incidence of events to a large extent (21). In this regard, Zahedinia et al. showed that most mothers with a child aged 1 to 5 had a good awareness of preventive behaviors in home affairs. Furthermore, Hatam Abadi et al. considered awareness as the most effective facilitator in adopting preventive behaviors for home accidents (22). Given limited information about accidents and related factors especially in children under the age of two in Iran, achieving an appropriate approach to prevent such events requires detailed information (23).

Given that such incidents are not predominantly reported, and the existing studies often address epidemiologic events in general; furthermore, considering that incidents can be prevented and mothers' awareness of incident preventive behaviors is important to reduce these incidents, this study aimed to determine the prevalence of choking in children less than 2 years old and awareness of mothers referring to health centers in Ahvaz city.

### Materials and Methods

This is a descriptive-analytic study in which the study population included mothers with children under the age of two covered by Ahvaz health care centers. Ahvaz has two health centers in its eastern and the western areas. Sampling was done using cluster sampling. Therefore, a list of all Ahvaz health care centers was first prepared. Then, among the health centers listed, 4 health centers were randomly selected. Then proportional to the possible proportion of size, and from the list of

mothers with children under the age of two, 116 people, including 20% unwilling to participate in the study, and the confidence interval of  $\pm 10\%$  (confidence interval), were randomly selected. (24). In April and May 2012, 53 mothers underwent two western health centers and 47 mothers went to two health centers in eastern Ahvaz for routine childhood care (86.2% response rate). The inclusion criteria included residence in Ahvaz, having at least one child less than 2 years old and a willingness to participate in the study. Furthermore, the exclusion criterion for leaving the study was not willing to respond to the questionnaire. After obtaining the necessary permissions from the health department of Ahvaz Jundishapur University of Medical Sciences and obtaining informed consent from mothers and assuring them about the confidentiality of information, the data collection tool, a researcher-made questionnaire, was completed by the trained interviewers. The questionnaire was prepared based on the review of related texts and using a questionnaire developed by Zahedinia et al. (25). The questionnaire consisted of 6 items in the first section that included the demographic and background variables; and 12 questions in the second part were related to the mothers' awareness about the choking of children. The answers to each of the questions were as "correct", "false", and "I do not know". The score to "correct" answer was 2, to "I do not know" was 1, and the wrong answer was zero. There was also a question of having an experience of choking of their child. To obtain validity, the questionnaire was first provided to 8 faculty members and experts to provide the necessary comments and suggestions for the face validity and clarity of the items. After updating the items, content validity was performed by calculating the Content Validity Ratio (CVR) and Content Validity Index (CVI); therefore, questions that had CVR less than 0.85 were withdrawn from the questionnaire. After that, the content validity index was calculated and questions with CVI higher than 0.79 were considered appropriate. To determine the confidence coefficient of the tool, the questionnaire

was distributed among 15 mothers with children under the age of two, who not included in the current study. The Cronbach's alpha was estimated to be 0.78. The results of maternal awareness were measured using a cut-point; they were classified into 3 levels: weak (less than 8), moderate (8 to 15), and good ( $>16$ ) (25).

The characteristics of the participants in the study include age, number of children, order of birth (first, second, third or more), mothers' educational status (years of education;  $<12$  years vs.  $>12$  years), mother employment status (employed vs. housekeeper), location (city vs. village) presented as frequency and percent. The groups difference was investigated by chi-square and one-way ANOVA as appropriate. multivariate logistic regression model were used to find the relationship between choking and awareness. Important variables that were significantly associated with knowledge score or estimated to affect chance of occurrence of infant choking by at least 10% were included in the model. The data were analyzed using SPSS software version 24. The significance threshold level was 0.05.

## Results

This study was performed on 100 mothers with less than 2 years old child who were referred to health centers. The age range of the mothers was between 18 and 43 years old with an average age of  $27.04 \pm 6.07$  years and the highest frequency of 54% for mothers in the 18-26 year-old group. Forty-one percent of participants had one child. Ninety percent of mothers educated  $< 12$  years. Only 4% of the mothers were employed, which is to say the majority of mothers participating in the study were housekeeper. In general, the incidence of choking in children under the age of two years was 19%. Despite the higher awareness score among mothers with a history of choking, there was no significant correlation between choking out and awareness of mothers (**Table 1**).

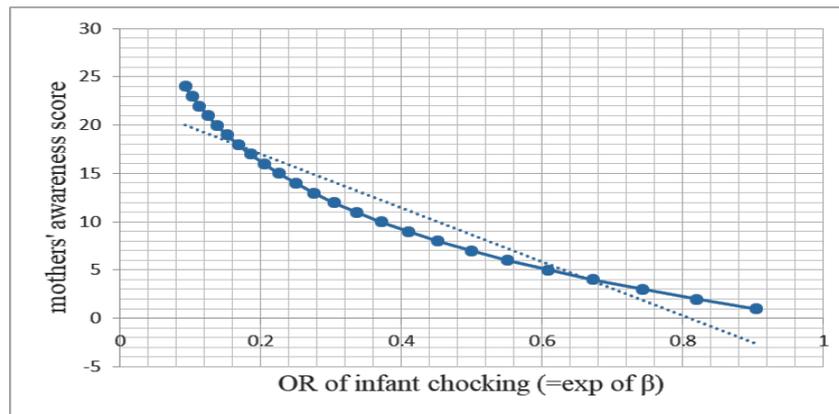
**Table 1:** Demographic Variables of Mothers Participating in the Study

Demographic variables	Range	No. (percent)	Awareness score Standard deviation ± average	Significance
Mother's age	26-18 years old	54(54%)	16.25±3.67	0.650
	35-27 years old	35(35%)	16.97±3.35	
	43-36 years old	11(11%)	16.45±3.38	
Number of children	1 child	34(34%)	16.73±3.28	0.917
	2 children	32(32%)	16.43±3.87	
	3 children and more	34(34%)	16.41±3.51	
birth order	First	41(41%)	16.65±3.11	0.932
	Second	26(26%)	16.57±4.19	
	Third and more	33(33%)	16.33±3.50	
Mother's education- years	<12	90(90%)	16.41±3.56	0.313
	> 12	10(10%)	17.60±2.95	
Mother's employment status	Employed	4(4%)	19.25±3.59	0.115
	Housewife	96(96%)	16.41±3.48	
Address	City	72(72%)	15.97±3.44	0.010
	Village	28(28%)	17.96±3.33	
History of choking	Yes	19(19%)	17.57±4.46	0.150
	No	81(81%)	16.28±3.50	

The average score of awareness of mothers participating in the study was  $16.53 \pm 3.51$  out of 24. 40% of the mothers had a moderate awareness and 60% of them had good awareness. Furthermore, more educated mothers gain higher score in the field of choking awareness. Those with >12 years education had higher awareness. However the difference was not statistically significant ( $P = 0.313$ ). Meanwhile, working mothers were more aware of choking than housewives. However, the results of the research indicate that there is no significant relationship between demographic variables and the mean score of awareness ( $P < 0.05$ ). The only variable that was

associated knowledge was the location; the mothers living in the village had significantly higher awareness score than mothers living in the city ( $P < 0.05$ ).

After adjusting the awareness score for location variable, with the help of the logistic regression model, the association between choking events and the awareness level of mothers was investigated. As it is represented in Diagram 1, despite the fact that the chances of choking decreased in children under the age of two, with increasing awareness of mothers in the study, this level was not statistically significant ( $\beta = 0.099$ ,  $SE = 0.080$ ,  $P\text{-value} = 0.212$ ).



**Chart 1:** Odds ratio for Choking in children under the age of 2 years in association with mothers' awareness. The association is adjusted for location.

### Discussion

The results of this study showed that the incidence of choking in children younger than 2 years old was 19%; some studies such as Noah Oeh et al. showed that strangulation of external objects in children less than 5 years old was 22% (23). Furthermore, a study by Sassan et al. stated that choking in children under the age of 2 years was 13.5% (26); as in the present study there was a questionnaire for mothers. Furthermore, Ghafari et al. cited 60% of patients with a history of coughing and abrupt choking (27). It seems that this difference is more due to the way in which research data is collected. The study done by Ghaffari et al. was conducted in the hospital on the existing cases.

The results of this study showed that the most of mothers had a good awareness, which was not consistent with the study by Kamal et al. (28) and Thein et al. (29). Mothers' awareness of these two studies was weak; however, they were consistent with Zahedinia et al. (25). This mismatch can be due to different sample size in different studies. In the present study, samples were collected from mothers referring to health centers. Moreover, the place of residence had an effect on consciousness, in which the mothers living in the village had significantly higher knowledge scores than mothers living in the city. Probably the implementation of the accident training program, which is carried out only in villages and by health

care providers, is the reason for the increased awareness of mothers in the villages.

The results of the study also showed that despite higher awareness score among mothers with a history of choking, there was no significant relationship between choking and awareness of mothers. However, the reason for the high level of awareness seems to be more about the feelings of fear in mothers due to the experience of choking of the child, which has been confirmed in some studies including Rahimi et al. (30).

One of the limitations of this study was that the presentation of results was based on the mothers' reports, because the possibility of reporting errors due to mothers' oblivion or the lack of reporting the fact for any other reason might be less than the actual prevalence. Moreover, the community under the study was children covered by health centers that may not represent the entire community of the children. Since the basis of the sample size in this study was the prevalence of choking, the accuracy in analyzing the incidence of events in different groups such as mothers with different educational levels was low.

### Conclusion

Although the majority of mothers had a good level of awareness about choking, the frequency of choking was considerable. Regarding the importance of these incidents and their subsequent complications in children, as well as considering that mothers are the main caretakers

of children, by raising the awareness of mothers, choking can be prevented. It is also recommended to conduct more extensive studies in a qualitative way to extract important and effective factors in such incidents among mothers with at least one child who experienced choking and to design effective interventions for preventative measures in mothers.

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### Conflict of interest

The authors declared no competing interests.

### Authors' contribution

M.M. and M.A.K. wrote discussed and edited the manuscript. M.A.K. is the guarantor of this work and, had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

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